

CLAIMS

1. A roaming system comprising: one or more controllers provided for each of zones that constitute
5 a wireless network; and a server communicatively connected to the controllers in the zones,

wherein each of the controllers comprises storage means that stores identification information given to wireless terminals for receiving a service,
10 the wireless terminals being registered with the zone in which the controller resides, and each controller operates to detect the identification information on a wireless terminal from the storage means when a request for the service is received from the wireless
15 terminal, and to provide the service to the wireless terminal if the identification information is detected or to issue a query for checking outside for the presence of the identification information if the identification information is not detected; and

20 the server is adapted to maintain information indicating which controller in which zone stores the identification information on the wireless terminals, and the server operates to, on receiving the query, detect a controller that stores the identification
25 information on the wireless terminal for which the identification information is not detected, to communicate with the detected controller to confirm the presence of the identification information on the wireless terminal which identification information is
30 not detected, and to allow the controller that has

issued the query to provide the service to the confirmed wireless terminal.

2. The roaming system according to claim 1,
5 wherein the server is integrated with one of the controllers.

3. The roaming system according to claim 1 or 2,
wherein the server operates to prohibit provision of
10 the service to the confirmed wireless terminal if the query is received from a controller in a particular zone.

4. A mobile communication system that allows
15 access to a single directory information tree from a plurality of directory servers corresponding to a plurality of sites in a mobile communication network, and comprises a plurality of authentication controllers provided in the respective sites for
20 authenticating mobile communication terminals that request a service at each site, and wherein

each of the plurality of authentication controllers comprises:

search request generation means that acquires
25 identification information on a mobile communication terminal and generates a search request directed to the directory server when a request for a service is received from the mobile communication terminal;

search request transmission means that transmits
30 the search request generated by the search request

generation means to the directory server in the corresponding sites; and

authentication processing means that determines whether or not to permit provision of the service to
5 the mobile communication terminal based on a search result acquired from the directory server, and wherein

each of the plurality of servers comprises:

storage means that stores identification information given to mobile communication terminals
10 for receiving a service, the mobile communication terminals being registered with the site corresponding to the directory server;

identification information detection means that detects, from the storage means, the identification
15 information on a mobile communication terminal specified in the search request from the authentication controller or in the search request redirected from a directory server corresponding to another site;

20 search request redirection means that redirects the search request from the authentication controller to a directory server located above or below in the directory information tree among the directory servers corresponding to other sites when the identification
25 information on the mobile communication terminal is not detected by the identification information detection means; and

search result provision means that provides a search result indicating success in detection of the
30 identification information to the authentication

controller when the identification information on the mobile communication terminal is detected in the other directory server to which the search request has been redirected by the search request redirection means, or
5 in the identification information detection means, and wherein

the authentication processing means operates to determine to permit provision of the service to the mobile communication terminal when the search result
10 indicating success in detection of the identification information on the mobile communication terminal is acquired from the directory server.

5. The mobile communication system according to
15 claim 4, wherein:

each directory server comprises reference information storage means that stores address information on another directory server located above or below in the directory information tree; and

20 the search request redirection means operates to refer to the address information stored in the reference information storage means and to redirect the search request to the other directory server located above or below in the directory information
25 tree.

6. A mobile communication system that allows access to a single directory information tree having a hierarchical tree structure from a plurality of server
30 apparatus, wherein of the plurality of server

apparatuses comprises:

entry management means that stores entries in a directory provided in a subtree in the directory information tree, an attribute value of each entry
5 being identification information given to any one of the mobile communication terminals which are able to provide a service in a mobile communication network;

identification information detection means that detects the identification information on a mobile
10 communication terminal among the attribute values of the entries stored in the directory by the entry management means;

search request transmission means that transmits a predetermined search request to another server
15 apparatus located above or below in the directory information tree when the identification information on the mobile communication terminal is not detected by the identification information detection means; and

service provision control means that allows
20 provision of the service to the mobile communication terminal when the identification information on the mobile communication terminal is detected in the other server apparatus to which the search request has been transmitted by the search request transmission means,
25 or in the identification information detection means, and that prohibits provision of the service to the mobile communication terminal when no other server apparatus is located above or below in the directory information tree or when the identification
30 information on the mobile communication terminal is

not detected in the other server apparatus to which the search request has been transmitted by the search request transmission means.

5 7. The mobile communication system according to claim 6, wherein:

 each server apparatus comprises reference information storage means that stores address information on another server apparatus located above
10 or below in the directory information tree; and

 the search request transmission means operates to refer to the address information stored in the reference information storage means and to transmit the search request to the other server apparatus
15 located above or below in the directory information tree.

 8. A mobile communication control method that allows access to a single directory information tree
20 from a plurality of server apparatus,

 wherein each of the plurality of server apparatuses performs a sequence of processing comprising:

 an entry management step for storing entries in
25 a directory provided in a subtree in the directory information tree, an attribute value of each entry being identification information given to any one of the mobile communication terminals which are able to provide a service in a mobile communication network;

30 an identification information detection step for

detecting the identification information on a mobile communication terminal among the attribute values of the entries stored in the directory at the entry management step;

5 a search request transmission step for transmitting a predetermined search request to another server apparatus located above or below in the directory information tree when the identification information on the mobile communication terminal is
10 not detected at the identification information detection step;

 a service provision permission step for allowing provision of the service to the mobile communication terminal when the identification information on the
15 mobile communication terminal is detected in the other server apparatus to which the search request has been transmitted at the search request transmission step or detected at the identification information detection step; and

20 a service provision prohibition step for prohibiting provision of the service to the mobile communication terminal when no other server apparatus is located above or below in the directory information tree at the search request transmission step or when
25 the identification information on the mobile communication terminal is not detected in the other server apparatus to which the search request has been transmitted at the search request transmission step.

30 9. A computer program for allowing access to a

single directory information tree from a plurality of server apparatus, the computer program causing each of the plurality of server apparatuses to perform a sequence of processing comprising:

5 an entry management step for storing entries in a directory provided in a subtree in the directory information tree, an attribute value of each entry being identification information given to any one of the mobile communication terminals which are able to
10 provide a service in a mobile communication network;

 an identification information detection step for detecting the identification information of a mobile communication terminal among the attribute values of the entries stored in the directory at the entry
15 management step;

 a search request transmission step for transmitting a predetermined search request to another server apparatus located above or below in the directory information tree when the identification
20 information on the mobile communication terminal is not detected in the identification information detection step;

 a service provision permission step for allowing provision of the service to the mobile communication
25 terminal when the identification information on the mobile communication terminal is detected in the other server apparatus to which the search request has been transmitted at the search request transmission step or detected at the identification information detection
30 step; and

a service provision prohibition step for prohibiting provision of the service to the mobile communication terminal when no other server apparatus is located above or below in the directory information tree at the search request transmission step or when
5 the identification information on the mobile communication terminal is not detected at the other server apparatus to which the search request has been transmitted at the search request transmission step.